

Appln. No.: 10/617,280
Docket No.: H2134-00006
Reply to Office Action dated December 12, 2005

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. A circuit for over-driving a light emitting diode comprising:
 - at least one super-luminescent light emitting diode having a maximum forward continuous current rating;
 - a power supply that provides a pulse width modulated signal;
 - an analog memory connected to said power supply;
 - a pulse generator comprising a window comparator engaged with said analog memory and responsive to a portion of said pulse width modulated signal; and
 - a power driver controlled by the output of said pulse generator and operably connected with said at least one super-luminescent light emitting diode and with said power supply so as to over-drive said at least one super-luminescent light emitting diode with a current having a magnitude above said maximum forward continuous current rating.
2. A circuit according to claim 1 wherein said magnitude is between two and ten times said maximum forward continuous current rating of said at least one super-luminescent light emitting diode.

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3. A circuit according to claim 1 wherein said analog memory comprises means for storing a portion of said pulse width modulated signal.

4. A circuit according to claim 1 wherein said analog memory comprises a diode and a capacitor.

5. A circuit according to claim 1 wherein said pulse generator comprises means for generating a pulse.

6. A circuit according to claim 1 wherein said pulse generator includes a one-shot timer having a trigger pin electrically connected to a threshold pin.

7. A circuit according to claim 6 wherein a resistor is electrically connected between said analog memory said trigger pin.

8. A circuit according to claim 7 wherein said a capacitor is electrically connected between said trigger pin, said threshold pin, and a reference level.

9. A circuit according to claim 8 wherein the values of said resistor and said capacitor determine an "off-on" time interval for output pulses from said pulse generator.

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10. A circuit according to claim 8 wherein said trigger pin and said threshold pin are held high relative to a reference by a capacitor after initial charging of said capacitor.

11. A circuit according to claim 8 wherein said power driver comprises a field effect transistor.

12. A circuit according to claim 8 wherein said power driver "over-drives" said at least one super-luminescent light emitting diode for a period of time less than the pulse frequency of said pulse width modulated signal.

13. A circuit according to claim 1 wherein said super-luminescent light emitting diode comprises an absolute maximum forward continuous current rating, at twenty-five °C, of thirty milliamperes, and a pulse forward current rating of seventy milliamperes.

14. A circuit according to claim 1 wherein said super-luminescent light emitting diode comprises an absolute maximum forward continuous current rating, at twenty-five °C, of twenty milliamperes.

15. A circuit according to claim 1 including a plurality of light-emitting diodes driven by driver means operably engaged with said power supply, and an

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inverter responsive to said portion of said pulse width modulated signal so as to suppress operation of said driver means for a period of time less than the pulse frequency of said pulse width modulated signal.

16. A circuit for over-driving a light emitting diode comprising:

- at least one super-luminescent light emitting diode having a maximum forward continuous current rating;
- a power supply that provides a pulse width modulated signal;
- an analog memory connected to said power supply;
- a window comparator engaged with said analog memory and responsive to a portion of said pulse width modulated signal; and
- a power driver controlled by the output of said window comparator and operably connected with said at least one super-luminescent light emitting diode and with said power supply such that when said pulse width modulated signal encounters said analog memory circuit, said window comparator is caused to trigger said power driver to "over-drive" said at least one super-luminescent light emitting diode for approximately twenty-five to thirty milliseconds so as to create a super-bright pulse of light to be emitted.

17. A circuit for over-driving a light emitting diode comprising:

- at least one super-luminescent light emitting diode having a maximum forward continuous current rating;

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a power supply that provides a pulse width modulated signal;
an analog memory connected to said power supply;
a pulse generator engaged with said analog memory and
responsive to a portion of said pulse width modulated signal; and
a power driver controlled by the output of said pulse generator and
operably connected with said at least one super-luminescent light emitting diode
and with said power supply so as to over-drive said at least one super-
luminescent light emitting diode with a current that is at least two times said
maximum forward continuous current rating.

18. A circuit for over-driving a light emitting diode comprising:
at least one super-luminescent light emitting diode having a
maximum forward continuous current rating;
a power supply that provides a pulse width modulated signal;
an analog memory connected to said power supply;
a pulse generator comprising a window comparator engaged with
said analog memory and responsive to a portion of said pulse width modulated
signal; and
a power driver controlled by the output of said pulse generator and
operably connected with said at least one super-luminescent light emitting diode
and with said power supply so as to over-drive said at least one super-

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luminescent light emitting diode with a current that is between two and ten times said maximum forward continuous current rating.

19. A signal comprising:

 a power supply that provides a pulse width modulated signal;
 an array of flashing lights arranged in electrical communication with said pulse width signal, each light comprising a plurality of light emitting diodes having a first color and a first brightness wherein each of said flashing lights includes at least one super-luminescent light emitting diode having a maximum forward continuous current rating, a second color, and a second brightness;
 an analog memory connected to said power supply and responsive to a portion of said pulse width signal;
 a pulse generator comprising a window comparator responsive to said analog memory and a portion of said pulse width modulated signal; and
 a power driver controlled by the output of said pulse generator and operably connected with said at least one super-luminescent light emitting diode and with said power supply so as to over-drive said at least one super-luminescent light emitting diode with at least five times said maximum forward continuous current rating.

20. A signal according to claim 19, wherein said second brightness is at least two times the magnitude of said first brightness.

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21. A signal according to claim 19, wherein said over-driven super-luminescent light emitting diode yields between four thousand and ten thousand millicandellas of illumination.
22. A signal according to claim 19 wherein said magnitude is between two and ten times said maximum forward continuous current rating of said at least one super-luminescent light emitting diode.
23. A signal according to claim 19 wherein said analog memory comprises means for storing a portion of said pulse width modulated signal.
24. A signal according to claim 19 wherein said analog memory comprises a diode and a capacitor.
25. A signal according to claim 19 wherein said pulse generator comprises means for generating a pulse.
26. A signal according to claim 19 wherein said pulse generator includes a one-shot timer having a trigger pin electrically connected to a threshold pin.

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27. A signal according to claim 26 wherein a resistor is electrically connected between said analog memory said trigger pin.

28. A signal according to claim 27 wherein said a capacitor is electrically connected between said trigger pin, said threshold pin, and a reference level.

29. A signal according to claim 27 wherein the values of said resistor and said capacitor determine an "off-on" time interval for output pulses from said pulse generator.

30. A signal according to claim 27 wherein said trigger pin and said threshold pin are held high relative to a reference by a capacitor after initial charging of said capacitor.

31. A signal according to claim 28 wherein said power driver comprises a field effect transistor.

32. A signal according to claim 29 wherein said power driver "over-drives" said at least one superluminescent light emitting diode for a period of time less than the pulse frequency of said pulse width modulated signal.

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33. A signal according to claim 29 wherein said super-luminescent light emitting diode comprises an absolute maximum forward continuous current rating, at twenty-five °C, of thirty milliamperes, and a pulse forward current rating of seventy milliamperes.

34. A signal according to claim 19 wherein said super-luminescent light emitting diode comprises an absolute maximum forward continuous current rating, at twenty-five °C, of twenty milliamperes.

35. A circuit according to claim 19 including means for driving said array of flashing lights and an inverter responsive to said portion of said pulse width modulated signal so as to suppress operation of said means for driving for a period of time less than the pulse frequency of said pulse width modulated signal.

36. A signal comprising:
a power supply that provides a pulse width modulated signal;
an array of flashing lights arranged in electrical communication with said pulse width signal, each light comprising a plurality of light emitting diodes having a first color and a first brightness wherein each of said flashing lights includes at least one super-luminescent light emitting diode having a maximum forward continuous current rating, a second color, and a second brightness;

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at least one analog memory connected to said power supply and responsive to a portion of said pulse width signal;

at least one pulse generator comprising a window comparator responsive to said at least one analog memory and a portion of said pulse width modulated signal; and

at least one power driver controlled by the output of said at least one pulse generator and operably connected with said at least one super-luminescent light emitting diode and with said power supply so as to over-drive said at least one super-luminescent light emitting diode with at least five times said maximum forward continuous current rating.

37. – 42. (Cancelled)